

## CLAIMS

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1. A pyrotechnically unlockable mechanical linking device (5) between two mechanical elements likely to be subjected to tensile and/or compressive forces along an axis, said device comprising at least one pyrotechnic component (23) and at least one locking means (15, 45, 48) linking the two mechanical elements along at least one axis, said locking means able to be released when the mechanical elements are subjected to tensile and/or compressive forces along said axis and held in the locking position by retention means (21) that are released by the pressure of gases generated by igniting the pyrotechnic component (23), device wherein the retention means comprise a piston (21) able to slide in an axial bore (20, 42, 65) under the effect of the gas pressure generated by the pyrotechnic component (23), the locking means (15, 45, 48) being in contact with the piston (21) at its external cylindrical surface, which ensures their retention in the locking position.

2. An unlockable mechanical linking device according to Claim 1, wherein the locking means (15) are linked in translation with a first (10, 68) of the mechanical elements and comprise at least one profile (18) co-operating with a matching profile (19) integral with a second (11, 67) of the mechanical elements, the locking means (15) also delimiting at least partially the axial bore (20) in which the piston (21) can slide.

3. An unlockable mechanical linking device according to Claim 2, wherein the locking means comprise at least two deformable tips (15) integral with the first (10, 68) of the mechanical elements and each comprising at least one profile (18) co-operating with a matching profile (19) integral with the second (11, 67) mechanical element, such tips delimiting the internal cylindrical bore receiving the piston (21).

4. An unlockable mechanical linking device according to Claim 3, wherein the tips (15) have conical external profiles (18).

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6. An unlockable mechanical linking device according to Claim 5, wherein the cylindrical bore (20) delimited by the tips (15) is extended by a chamber (27) intended to receive the gas pressure generated by igniting the pyrotechnic component (23).

7. An unlockable mechanical linking device according to one of Claims 5 or 6, wherein the piston (21) incorporates a second cylindrical seat (29) of a diameter less than that of the cylindrical surface (22) or first seat retaining the tips, said second seat being positioned opposite the bore (20) delimited by the tips (15) when the piston (21) is translated under the action of the gas pressure, thereby allowing the tips (15) to bend in the direction of the piston (21), such bending allowing the external profile (18) of the tips (15) to be disengaged from its matching profile (19).

20 8. An ununlockable mechanical linking device according to Claim 7, wherein the second cylindrical seat (29) is delimited on one side by a collar (30) guiding the piston (21) with respect to an internal cylindrical surface (28) of the chamber (27).

25 9. An unlockable mechanical linking device according to  
Claim 8, wherein, after the piston (21) has translated, the  
collar (30) is housed in a groove (31) arranged at one end  
of the chamber (27).

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10. An unlockable mechanical linking device according to one of Claims 3 to 9, wherein the cylindrical surface (22), or first piston seat retaining the tips incorporates a rib (33) co-operating with a circular groove arranged on the cylindrical surface of the internal bore (20) so as to ensure the axial positioning of the piston (21) in its retention position.

11. An unlockable mechanical linking device according to one of Claims 3 to 10, wherein it incorporates at least three deformable tips (15) evenly spaced angularly.

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12. An unlockable mechanical linking device according to one of Claims 2 to 4, wherein the first of the mechanical elements carrying the deformable tips (15) comprises a threaded part (68) forming the shaft of a screw, the second mechanical element constituting a head (67) for said screw.

13. An unlockable mechanical linking device according to Claim 12, wherein the pyrotechnic component (23) is integral with the screw head (67).

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14. An unlockable mechanical linking device according to one of Claims 12 or 13, wherein the axial bore (20) receiving the piston (21) is arranged in the screw shaft (68).

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15. An unlockable mechanical linking device according to Claim 14, wherein the axial bore (20) has an internal counter-sink (71) forming an axial abutment for the piston (21) when it is occupying its unlocking position.

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16. An unlockable mechanical linking device according to one of Claims 14 or 15, wherein the piston (21) incorporates a ring-shaped sealing ring (73) co-operating with an internal cylindrical surface of the bore (20).

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17. An unlockable mechanical linking device according to one of Claims 13 to 16, wherein the screw head (67) comprises a body (70) delimiting an internal chamber (74) that is obturated on one side by the screw shaft (68) and on the other by a plug (75) that presses on a peripheral protuberance (78) of the pyrotechnic component (23), a spacer ring (79) surrounding an end of the pyrotechnic component (23) and incorporating a first abutment surface (80) co-operating with the protuberance (78) on the component and a second abutment surface (81) for an end (82) of the screw shaft (68) so as to avoid any contact between it and the pyrotechnic component (23) when the plug (75) is mounted.

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18. An unlockable mechanical linking device according to Claim 2, wherein the locking means comprise at least two jaws (45) each having a profile co-operating with a matching profile integral with the second mechanical

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element, each jaw (45) being able to move radially in a radial housing (44) integral with the first element so as to be engaged in or disengaged from the matching profile, such jaws being held in the locking position by the piston (21).

19. An unlockable mechanical linking device according to Claim 18, wherein the external profile of the jaws (45) is a threaded profile.

20. An unlockable mechanical linking device according to one of Claims 18 or 19, wherein the jaws (45) are held in contact with the piston (21) by at least one flexible ring (46).

21. An unlockable mechanical linking device according to one of Claims 18 to 20, wherein the piston (21) incorporates translation stop means (47) ensuring its immobilisation with respect to the first mechanical element, such stop means being fractured when the pyrotechnic component (23) is ignited.

22. An unlockable mechanical linking device according to one of Claims 18 to 21, wherein the pyrotechnic component (23) is integral with the first mechanical element.

23. An unlockable mechanical linking device according to one of Claims 19 to 22, wherein the second mechanical element is formed by a nut (36) co-operating with the threaded profile of the jaws (45).

24. An unlockable mechanical linking device according to Claim 1, wherein the locking means are formed by at least two balls (48) that are housed in holes (50) arranged in a tubular sleeve (51) integral with the first (10) of the mechanical elements and co-operating with a groove (56) integral with the second mechanical element (49), the balls (48) being held in place by the piston (21), which is positioned inside the tubular sleeve (51) and coaxial to it.

25. An unlockable mechanical linking device according to Claim 24, wherein the piston (21) incorporates a cylindrical seat (62) of the same diameter as the internal

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diameter of the sleeve, said cylindrical seat being located opposite the holes (50) in the sleeve thanks to positioning means (63).

26. An unlockable mechanical linking device according to Claim 25, wherein the positioning means comprise a shearable plate (63) integral with the piston (21) and pressing on a front end of the sleeve.

27. An unlockable mechanical linking device according to Claim 26, wherein it incorporates a chamber (64) in which the gases generated by the pyrotechnic component (23) develop, said chamber arranged at one end of a head (52) integral with the second mechanical element (49) and obturated by the shearable plate (63).

28. An unlockable mechanical linking device according to one of Claims 24 to 27, wherein the groove (56) is made in a ring (58) that is made integral with the second mechanical element (49) by crimping a band (59).

29. An unlockable mechanical linking device according to one of Claims 1 to 11 or 24 to 28, wherein the first mechanical element is integral with one end of a rod of a master brake cylinder for a vehicle and the second mechanical element is integral with a brake pedal.